CS 174A W22 Final Project Topic Proposal

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BruinPlanet

Proposal

Our proposal is an explorable planet simulation, where the user can walk and jump around the planet. The explorable planet will orbit and be orbited by other celestial bodies that will be visible in the background. Some of these may be stars that provide light to the nearby planets. Our goal is to be able to add a mini-game aspect where falling stars may land on the planet, in which case the user will have to dodge them to avoid being hit by them. In a manner similar to the game *Super Mario Galaxy*, we will have the camera be centered over the user, so that wherever they walk on the planet, the camera hovers directly over them. We will use **physics-based simulation** to simulate gravity when jumping, as well as the orbit shape and speed of the planets surrounding. There will be **collision detection** to allow for the user to stay on the surface of the planet and to figure out if the user gets hit by a star. The user interactivity is the ability for the user to move forward, backward, right, and left and to jump on the planet, presumably using the 'wasd' keys for movement and the space bar for jumping. We also are going to allow the user to adjust the gravity levels on their planet so that their jump may last longer or shorter.

Theme of Animation

Space
Platformer

Topics from Course Used

Interaction
Physics
Lighting, camera transforms

Interactivity

Translatory movement
Jumping

Advanced Features

Physics-based simulation (jumping with gravitational force, orbits)
Collision detection
Shadowing (if time permits)